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ABSTRACT

This study examined the contention that teacher instruction in the "correct use" of classroom equipment, as in the Montessori training method, inhibits a child's ability to generate other uses for that same equipment. Subjects were 31 matched pairs of four- and five-year-olds from two Montessori preschools and two traditional nursery schools. Each child was given adaptations of four Unusual Uses Test from Torrance's Minnesota Tests of Creative Thinking and Writing. The tests utilized two items familiar to all children (a stuffed dog and a fork) and two Montessori equipment items (a triangular wooden block and a button frame). A comparison of the children's test results contradicted theassertion that teacher demonstration of how to use equipment inhibits creativity, whether or not the objects used are Montessori equipment items. (ST)

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Divergent Production in Montessori Children[1]

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Footnote to Title and Authors

1. The authors wish to thank the staff and children of the 4 schools involved in providing subjects. This paper was originally presented at the biennial meeting of the Society for Research in Child Development, 1973.

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Divergent Production in Montessori Children

Despite the revival of popularity of Montessori schools in America, there has been remarkably little research on the effects of the Montessori method. Several proponents have boosted the method in popular books, but without presenting data to back their claims.

In contrast to the enthusiasm of Montessori proponents, the method has generally been viewed hostilely by traditionalists concerned with social and emotional development in preschool children. An especially common criticism is that the Montessori method will extinguish the young child's budding creativity, because it requires the teacher to continually demonstrate the "correct" way to use classroom materials (cf. Widmer, 1970). Although it remains to be demonstrated that teacher demonstration and correction harms creativity, it does seem clear that teacher demonstration and correction are especially frequent in Montessori classrooms. The differences in methods advocated in Montessori and traditional textbooks are striking, and data collected by Berk (1970) demonstrate that these differences are equally observable in the classroom. Compared with teachers in a traditional university nursery school, teachers in a Montessori preschool much more often interrupted children to demonstrate the proper use of equipment or to correct the way that they were using it.

Some data appearing to support the assertion that Montessori training inhibits creativity has been reported by Dreyer and Rigler (1969). This study compared 14 Montessori children with 14 children attending a traditional nursery

school. The children were matched in pairs by social class, age, sex, and intelligence. There were no differences between the parents of the 2 sets of children on a variety of parental attitude and value scales. In addition, there were no overall differences between the 2 groups of children, but several interesting pattern differences emerged. Montessori children were more task-oriented. They completed the Children's Embedded Figures Test (CEFT) more quickly, although they did not get any more correct answers than the other children. On the verbal and coding tasks of the ITPA, total scores did not differ significantly but the Montessori children mentioned more physical characteristics of the objects while the nursery school children mentioned more functional characteristics (how one would use the objects). The free drawings of the children showed that the Montessori children's drawings contained many more geometric forms and many fewer people than the drawings of the children in the university nursery school. Thus, in general the Montessori children seemed to be more task-oriented and more oriented toward discrimination of sensory-perceptual aspects of the environment, while the traditional nursery school children seemed to be more person-oriented and concerned with the use of objects rather than their mere description.

Finally, and most pertinently to the present investigation, the children were administered Torrance's Picture Construction Test, one of his battery of creativity measures. The child is given a pencil and a blank sheet of paper, along with a red piece of paper cut in the shape of a jellybean. He is asked to draw a picture which will include this "jellybean" as an integral part. Scores on this test favored the traditional nursery school children over the Montessori children, supporting the contention that Montessori training inhibits creativity.

The present authors feel that this conclusion may be premature, however,

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in view of the task used. Children in traditional nursery schools spend much more time doing free drawing than children in Montessori schools, so that the findings might have represented a simple practice advantage to the children in the traditional schools rather than any inhibition of "creativity" in Montessori children. The present study was designed to more directly address the hypothesis that teacher instruction in the "correct" use of classroom equipment will inhibit children's ability to generate other uses for that same equipment.

Method

Subjects were 31 matched pairs of suburban upper middle class white children, 11 female and 20 male, drawn from two Montessori preschools and two traditional nursery schools. Children were matched on parental education and occupation, sex, and age. IQ data were not available, but the uniformly high IQ of the subjects suggests that most were in the high range. All children were tested near the end of the school year in classes for four-year olds or five-year olds (kindergarten). Each child was tested individually in an unused room at his school. All children were tested by the same tester, a male graduate student in educational psychology.

The basic data for the experiment were 4 adaptations of the Unusual Uses Test from Torrance's (1962) Minnesota Tests of Creative Thinking and Writing. Each session began with the Product Improvement Test from this battery (using a stuffed toy dog as the stimulus), to accustom the child to the testing situation, allow the examiner to establish rapport, and generally function as a "warmup." Following this "warmup," the child took the Unusual Uses Tests, with the stuffed toy dog, a fork, a rectangular wooden block used in the primary Montessori core board, and a Montessori button frame [illegible] of

these 4 items were items familiar to all of the children and not particularly identified with the Montessori method, while the latter 2 were Montessori equipment items which teachers repeatedly demonstrated in the Montessori classrooms.

The children were given 5 minutes to think of uses for each of the 4 items. Their responses were recorded and later scored for fluency, flexibility, originality, and elaboration, following the scoring guidelines presented by Yamamoto (1964). Agreement between 2 independent coders averaged 86% (range = 71% - 98%). Disagreements were resolved by discussion, without knowledge of whether the response had come from a Montessori or a traditional child.

Results

The critical school group differences were assessed with the *t*-test for matched pairs. Thirteen of 16 differences, including the single difference that reached the .05 level of statistical significance, favored the Montessori children. None of the differences in responses to the 2 Montessori equipment items reached statistical significance, although 6 of 8 favored the Montessori children. Thus, there was no evidence that teacher demonstration of the uses of equipment had inhibited the Montessori children's divergent thinking about that equipment.

Content analyses of the children's responses further confirmed the absence of differences between Montessori and traditional nursery school children. There were no significant group differences in the frequencies of: arts and crafts responses; tool use responses; washing, cleaning, and polishing responses; repetition of the manifest use (eat with it, etc.); or anti-social uses (kill, stab, hit, etc.).

Sex differences were assessed with simple t-tests. Fourteen of the 16 comparisons favored boys over girls, although only one reached the .05 level of significance. Age was not significantly correlated with Unusual Uses scores (unsurprisingly, in view of the reduced range).

Discussion

The data clearly contradict the assertion that teacher demonstration of how to use equipment will inhibit creativity. Montessori children showed no signs of reduced ability to produce divergent uses for objects, whether or not these objects were Montessori equipment items which had been demonstrated for them by their teachers. If it is true that Montessori training inhibits creativity (and the present study provides no evidence that it does), the reasons do not lie in the emphasis placed on teacher demonstration and correction regarding the uses of classroom equipment.

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